Exhibit 2–Public Version of the Rebuttal Expert Report of Kevin M. Murphy, Ph.D.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

FEDERAL TRADE COMMISSION	)	
600 Pennsylvania Avenue, N.W.	)	
Washington, D.C. 20580	)	
	)	Civ. No. 1:07-CV-01021
Plaintiff,	)	
	)	
	)	
v.	)	
	)	
WHOLE FOODS MARKET, INC.	)	
550 Bowie Street	)	
Austin, Texas 78703	)	
	)	
and	)	
	)	
WILD OATS MARKETS, INC.	)	
1821 30th Street	)	
Boulder, Colorado 80301	)	
	)	
	)	
Defendants.	)	

REBUTTAL EXPERT REPORT OF KEVIN M. MURPHY, Ph.D.

Dated: July 13, 2007

1. I am Kevin Murphy, the George J. Stigler Distinguished Service Professor of Economics at the University of Chicago Graduate School of Business. I have been retained by the Federal Trade Commission to evaluate the report of Dr. David Scheffman submitted on behalf of Whole Foods in this matter. I also submitted an expert report in this matter.

2. My qualifications as an expert and my current resume were provided as part of my expert report in this matter.

3. My Report is organized as follows. Section I of my report provides a summary of my opinions regarding the report submitted by Dr. Scheffman. In Section II I describe some critical errors Dr. Scheffman made in applying the "Critical Loss" methodology to the issues in this case. I show that his methodology is internally inconsistent as a matter of logic and also inconsistent with the facts in this case. In Section III, I show that a corrected version of his methodology reverses his conclusion. In Section IV, I show how a corrected version of his methodology illustrates the anticompetitive effects of the proposed closing of the acquired Wild Oats stores. In Section V, I show that Dr. Scheffman's conclusions regarding Whole Foods and Wild Oats pricing are factually incorrect and that in any case he draws the wrong conclusions from his alleged facts. Section V concludes my report.

I. Summary of Opinions

4. Based on my reading of Dr. Scheffman's Expert Report, the work I did in preparation for my own Expert Report, and my review of the backup material provided by Dr. Scheffman, I have reached the following conclusions:

   1. Dr. Scheffman's methodology of comparing the Critical Loss for a hypothetical monopolist with qualitative evidence on the price sensitivity of customers is not reliable.

2. The critical flaw in Dr. Scheffman's analysis is widely known in the literature on the limits of Critical Loss analysis.

3. Dr. Scheffman's analysis fails to recognize that the fundamental issue in this acquisition is how the competitive constraints on the combined entity will change as a result of the acquisition, not whether Whole Foods currently competes, at some level, with other firms in addition to Wild Oats.

4. Correctly done, a Critical Loss analysis that uses precisely the evidence cited by Dr. Scheffman indicates that the proposed acquisition would have significant anticompetitive effects.

5. Dr. Scheffman uses a 5% standard for what constitutes a "small but significant non-transitory increase in price" (SSNIP), even though he accepts and recently publicly opined that such a standard is inappropriate for mergers in low net margin industries like supermarkets.

6. Dr. Scheffman's analysis focuses largely on pricing from Whole Foods' perspective, and thereby misses the anticompetitive motive for the closure of many Wild Oats stores that currently compete against Whole Foods.

7. Dr. Scheffman's pricing analysis is inconsistent with the evidentiary record indicating that Whole Foods competes by both lowering prices and increasing the quality of service when it competes directly with Wild Oats and other premium/natural organic supermarkets ("PNOS").

5. My analysis of the materials provided by Dr. Scheffman is on-going. As such I reserve the right to update my analysis as further information becomes available through deposition or at trial.

II. Basic Flaws in Dr. Scheffman's Critical Loss Analysis

6. Much of Dr. Scheffman's report is devoted to what he refers to as his "Critical Loss" (CL) analysis. This method has been applied in many merger cases. CL analysis can be useful, but as with most tools, care must be taken to use it properly. When, as in Dr. Scheffman's report, CL is applied poorly it can yield very misleading results and incorrect conclusions. Indeed, the misuse of CL analysis has been the focus of a significant literature in economics over the past decade.[1]

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[1] See Barry C. Harris and Joseph J. Simons, "Focusing Market Definition: How Much Substitution is Necessary?" Research in Law and Economics, v. 12, 1989, p.207-226; Langenfeld James and Wenquing Li, "Critical Loss Analysis in Evaluating Mergers,"

7. The classic misuse of CL analysis is summarized nicely by Katz and Shapiro:[2]

> "We described in our article a simple but potentially misleading "Defendants' Story" that makes arguments based on Critical Loss to support a broad market definition. The story goes as follows: With high margins, the Critical Loss is small, and thus a price increase is likely to lead to an Actual Loss greater than the Critical Loss. Because the Actual Loss is greater than the Critical Loss, a hypothetical monopolist would not find it profitable to raise price, and thus the market definition should be broadened. We emphasized in our article that this story is very incomplete because a high margin tends to imply a small Actual Loss as well as a small Critical Loss."

8. The methodology criticized in this passage is <u>precisely</u> that employed by Dr. Scheffman in this case. I will now explain why Dr. Scheffman's analysis in this case is of the "misleading" variety referred to by Katz and Shapiro. I begin with a review of Dr. Scheffman's methodology.

9. Dr. Scheffman begins with the calculation of the CL. As both Katz and Shapiro and Dr. Scheffman point out, this part of the analysis is indeed "just arithmetic."[3] If a hypothetical monopolist of a given set of products were to raise price by a small amount, there would be two effects on its profits. First, the higher price would cause the monopolist to sell fewer units, reducing profits. Second, however, the units that buyers still purchase fetch a higher price, raising profits. The CL is the reduction in sales that balances these two effects, leaving the hypothetical monopolist's profits unchanged. Any "Actual Loss" that is larger than the CL would make the price increase unprofitable. One may calculate the CL from the

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The Antitrust Bulletin, Summer 2001, pp. 299-337; Danger, Kenneth L. and H.E. Frech III, "Critical Thinking about `Critical Loss' in Antitrust," The Antitrust Bulletin, Summer 2001, pp. 339-355; Daniel P. O'Brien & Abraham L. Wickelgren, A Critical Analysis of Critical LossAnalysis, 71 Antitrust L.J. 161 (2003).

[2] Katz and Shapiro, "Further Thoughts on Critical Loss," Antitrust Source, March 2004, p. 2

[3] Expert Report of David Scheffman, at ¶100.

hypothetical monopolist's margin, m, and the magnitude of the hypothetical SSNIP, X. The formula for CL is simple:

$$(1) \qquad CL = \frac{X}{X + m}.$$

10. Dr. Scheffman uses this formula to compute a CL threshold of ▮▮▮ based on the Whole Foods' margins of $m=$▮▮ and a SSNIP of $X=5\%$. He also calculates a CL of ▮▮▮ based on Wild Oats' margins of $m=$▮▮ and the same SSNIP of $X=5\%$. The correct conclusion based on this formula is that a 5 percent price increase would not be profitable for our hypothetical monopolist if that price increase reduced sales by more than ▮ percent, starting from the ▮ percent margin Dr. Scheffman claims is appropriate for Whole Foods.

11. The next step in Dr. Scheffman's analysis is to provide a long review of qualitative evidence that, he asserts, proves that the Actual Loss for a hypothetical PNOS monopolist would greatly exceed the CL thresholds of ▮▮▮▮ percent calculated above. Yet, somewhat mysteriously, Dr. Scheffman provides literally no quantitative evidence for the magnitude of the Actual Loss that could be compared to these thresholds, and no methodology for calculating the Actual Loss. He simply asserts that the Actual Loss would "far exceed" the thresholds[4].

12. Putting aside this lack of evidence, Dr. Scheffman's application of CL contains an even more basic flaw. To see that there is something missing from Dr. Scheffman's logic—"the whole story," in the words of Katz and Shapiro—it is useful to consider a symmetric analysis where we ask whether it would pay for Whole Foods or Wild Oats to reduce price by 5%. In this case, rather than a "Critical Loss" there is a "Critical Gain"

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[4] Expert Report of David Scheffman, at ¶ 117

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(CG) in sales that the seller must achieve in order to make such a price decrease profitable. Using the same notation as above, the threshold CG is simply

$$(2) \qquad CG = \frac{X}{m - X}$$

13. Applying equation (2) for $X=.05$ and the margins used by Dr. Scheffman, we obtain CG=███ percent using the Whole Foods margin of $m=$███ and CG=███ percent using the Wild Oats margin of $m=$███ If the evidence presented by Dr. Scheffman is sufficient to prove that the Actual Loss for a hypothetical monopolist "<u>arising from such a price increase is likely to far exceed the Critical Loss</u>"[6], then that same evidence would also show that the "Actual Gain" to Whole Foods or Wild Oats from a price decrease would also far exceed the "Critical Gain" given by equation (2).[7] <u>Every</u> piece of evidence he advances to argue that consumers would be very sensitive to a price increase by the hypothetical monopolist applies with equal (in fact greater) force to show why consumers would be very sensitive to price decreases by Whole Foods or Wild Oats. This is exactly the issue raised by Katz and Shapiro and by O'Brien and Wickelgren in their critiques of the misuse of CL analysis.

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[5] One can obtain a tighter restriction on the data by using a smaller price decrease. After all, even a small price decrease should reduce profits for Wild Oats and Whole Foods if they are currently maximizing profits. Doing this cuts the effective "gap" between the CL and CG.

[6] Expert Report of David Scheffman, at ¶ 117

[7] Of course it is possible that what Dr. Scheffman means to "far exceed" ███ percent actually falls between ███ percent and ███ percent but that would require a level of precision inconsistent with his entirely qualitative analysis and most likely well beyond the precision of most quantitative economic analysis. In addition, as I point out below, his use of a 5% SSNIP is inappropriate. If he were to use a 2% SSNIP, the corresponding CL and CG would be ███ and ███ respectively. Proving that the level of price sensitivity would fall within such a narrow range would be even more difficult.

14. In a paper with Joseph Simons[8], Dr. Scheffman responded to the Katz-Shapiro critique. Scheffman and Simons argued that it is <u>possible</u> that the hypothetical monopolist would not want to increase price even if the existing firms don't want to decrease price – they postulate that consumers <u>might</u> respond more to price increases than they do to price decreases– a phenomenon referred to as the "kinked demand curve".[9] If true, this specific demand formulation would reconcile things, but one cannot simply accept the assertion that consumers behave in this manner without evidence that they actually do so. Economic theory makes no prediction that consumers would respond more to price increases than to decreases, and Dr. Scheffman provides zero evidence that such asymmetric responses would be expected in this case, or in any other one. All of the qualitative evidence he relies on is equally supportive of large responses to price increases and decreases, for both existing firms and for a hypothetical PNOS monopolist.

15. Why is the prediction that existing firms should cut price problematic? The answer is simple. <u>The exact same theory he uses to predict the behavior of the hypothetical monopolist implies that existing firms would earn greater profits if they charged lower prices.</u>[10] Dr. Scheffman has no

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[8] David T. Scheffman & Joseph J. Simons, The State of Critical Loss Analysis: Let's Make Sure We Understand the Whole Story, ANTITRUST SOURCE, Nov. 2003.

[9] In his article with Simons, Dr, Scheffman provides alternative defenses but they are either incorrect or inapplicable to this case.

[10] There are several reasons why his predictions could be off. First, he could be overstating the margins – this would cause a bias in both the prediction for the hypothetical monopolist and the existing firms. Second, he could have over estimated the degree of consumer price sensitivity. Again, this would bias predictions for both consumers and existing firms to understate the level of prices charged. Third, firms could not be profit maximizing or have more complex objectives. In this case he would have to explain why this would not be true for both the hypothetical monopolist and the existing firms. Fourth, it could be that marginal costs are much higher for increases in output than they are for reductions in output.

sensible explanation or evidence for why Whole Foods and Wild Oats are foregoing these profits. Since his "model" under-predicts prices for existing firms it will almost certainly under-predict the price that a hypothetical monopolist would charge. Both predictions are based on precisely the same framework and exactly the same evidence.

16. In fact, there is an important reason to believe that sales would be more sensitive to price decreases by existing firms than to price increases by the hypothetical monopolist. Existing firms have the ability to draw sales from other firms in the PNOS market whereas, by definition, the hypothetical monopolist does not. The ability to draw sales from other firms within the market makes individual firms' sales even more sensitive to price than would be the sales of the hypothetical monopolist (to price decreases or price increases). This observation, that a firm which controls all of the capacity in the market would face less elastic demand than would the individual firms in the market constitutes the centerpiece of horizontal merger policy.

17. A final point about Dr. Scheffman's calculation of the CL is noteworthy and important. Remarkably, in performing his calculations Dr. Scheffman utilizes a 5% SSNIP even though he cites a prior opinion of this court and economic literature (at ¶114) that smaller SSNIPS are appropriate for retailing markets. In fact, Dr. Scheffman shares this court's opinion on

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This may be plausible is some cases such as where firms face capacity constraints but it would be hard to argue that here, and Dr. Scheffman does not even attempt to do so. Finally, as stated above, he could argue that responses are different for price increases and price decreases - again such a claim, while possible, would require evidence that he fails to provide. It also bears note that the standard "kinked demand curve" theory is inapposite to market definition as it applies to the demand curves faced by individual firms and does not make economic sense at the market level. It does not explain why the sensitivity to firm price decreases would be less than the sensitivity to market wide increases as Dr. Scheffman's analysis would require.

this point, as revealed in the transcript of his remarks on May 24, 2007 at an FTC conference on "Grocery Store Antitrust: Historical Retrospective and Current Developments"

> "Margins [in the supermarket industry] at the local level were quite small... a few percentage points, across all areas....Now, you have to be careful interpreting margins and trying to make some inferences. But what that showed is that in this industry, you could just see -- well, clearly across areas, the structure, industry structure, varied a lot, and lots of other things varied a lot. But what you see overwhelmingly is the margins are really small.
>
> So one of the things I think the Commission realized -- I remember making some intemperate remarks during that time: Why are we looking at this industry, given these margins? But I don't agree with that; there's certainly a reason to look at supermarket mergers generally if we look at them in the right way.
>
> *A hypothetical 5 percent price increase for a supermarket would lead it to being the most profitable supermarket in history. ...Their margins are tiny. You would have a multiple of any existing margins if you had that big a price increase. .... none of us ever thought the price increase would ever be that large.*
>
> That's not to say we shouldn't worry about supermarket mergers. The usual argument is 1 percent of people's savings of their expenditures on grocery products is a lot of money, so we should care about it."[11]

18. So, in spite of his opinion that a 5 percent SSNIP standard is vastly too high for the industry and market at issue here, he uses it anyway. The effect is to make it more likely that the FTC's proposed PNOS market definition will fail his hypothetical monopolist test.

19. In the next section I show how, if correctly applied, the CL concept could be used to address market definition in this case.

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[11] Transcript of remarks of Dr. Scheffman at the FTC conference on "Grocery Store Antitrust: Historical Retrospective and Current Developments", May 24, 2007.

III. Integrating the Analysis of How A Proposed Acquisition Changes Pricing Incentives into the Critical Loss Framework

20. One approach to "fixing" the CL analysis presented by Dr. Scheffman is to find out what causes his model to understate the incentive for firms to raise price. For example, Dr. Scheffman might overstate the initial level of Whole Foods' and Wild Oats' margins. In that case, his estimate of the CL is too small as is the implied threshold for the Critical Gain. This could reconcile the actual pricing decisions of Whole Foods and Wild Oats with his qualitative claims about consumers' high degree of price sensitivity. But he now faces a new problem: establishing that the price sensitivity falls right in the range where the actual loss for the hypothetical monopolist is more than the CL while the actual gain for the individual competitors is smaller than the CG would remain. That is to say, he is caught in the middle, having to fight against both ends.

21. One can perform a useful analysis of the relevant market that is consistent with the current behavior of Whole Foods and Wild Oats without precise evidence on the level of price sensitivity faced by the hypothetical monopolist. The key insight is that the amount by which a hypothetical monopolist would be able to increase price depends on how the ability to raise price <u>changes</u> when the hypothetical monopolist replaces individual sellers, who would price unilaterally.[12] If the incentive to raise price does not change when we switch from an individual seller to the hypothetical monopolist, then the hypothetical monopolist would not find it profitable to increase price. Then the candidate market would not qualify as a relevant antitrust market under the SSNIP test.

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[12] Note that this does not mean that firms do not take account of reactions by their rivals. The assumption required is that firms maximize their individual profits and do not price based on what will make their competitors more profitable (i.e. collusion).

22. However, pricing incentives do change when we postulate the hypothetical monopolist. When a single firm raises price it will increase the profits of its competitors by shifting sales in their direction or by allowing them to increase price. Since the hypothetical monopolist (i.e. a sole price setter) sets prices to maximize the joint profits of all of the firms in the market, this sole seller will "internalize" the gains of other firms in its pricing decision, and so it will have a greater incentive to raise price than did the individual firms, who were unable to "internalize" their diversions to one another.

23. To assess whether it would be profitable for the hypothetical monopolist to increase price by some critical amount, X, above the current level, we simply need to determine whether the profit increase to other firms in the proposed market more than compensates for the profit loss suffered by the candidate firm that raises its price.[13,14] The amount of profits gained by the other firms in the market can be directly assessed if we know two things. First, we need to know what fraction of the sales lost by the firm that raised its price will be captured by other firms in the candidate market – these are sales are lost to the individual firm that raises its price but are retained by a hypothetical monopolist of all the firms in the candidate market. This is commonly referred to as the aggregate diversion ratio. Second, we need to know the incremental profit on these transferred sales. Together the aggregate diversion ratio and the profit margin will determine how much the other firms gain when an individual firm raises price.

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[13] Since the individual firm is profit maximizing, we know that its profits will not increase as it raises prices – otherwise it would have done so individually.

[14] To consider a simultaneous increase in all prices we simply need to sum all of these effects across the various producers.

24. A larger fraction of sales diverted to other firms in the market and/or a larger profit margin on these sales will increase the hypothetical monoplists incentive to raise price. Note that the information used in a correctly formulated CL analysis is <u>about how the incentives to increase price change when we allow all firms in the industry to "merge"</u>, as they do in the hypothetical monopolist test. But this is what should matter in a merger case—how do pricing incentives change as we combine firms?

25. The same machinery used in the standard CL analysis can be used to calculate whether it would be profitable for a hypothetical monopolist to increase price by the desired amount. We also need to know how rapidly profits of the existing firm fall as we raise price above its individual profit maximizing level. This loss is determined by the "shape" of the firm's demand function. O'Brien and Wickelgren, in their critique of CL analysis, use this very methodology to calculate whether it would be profitable for a hypothetical monopolist to increase price by a given amount, based on the diversion ratio and the profit margin in the industry. Their results are reproduced in Exhibit 1.

26. The values in Exhibit 1 give the critical diversion ratio; that is, the diversion ratio above which a price increase of the given amount is profitable for different levels of the industry margin. For example, with a price increase standard of $X=5\%$ and a margin of $m=$ ██ (the figures used by Dr. Scheffman in his analysis) the critical diversion ratios, for two widely disparate assumptions regarding the "shape" of the demand curve, are ██ percent for linear demand (i.e. demand curves are straight lines, an assumption that demand becomes substantially more elastic as the price increases) and █ percent for constant elasticity demand (an assumption that the elasticity of demand is the same regardless of the

market price).[15] Hence, under the assumption of linear demand a diversion ratio of more than █ percent would make it profitable for a hypothetical monopolist to increase price 5 percent. With constant elasticity demand, this threshold for the diversion ratio falls to only █ percent.

27. While we do not know the precise shape of the demand curve and therefore the exact level of the critical diversion ratio, the results shown in Exhibit 1 should give one pause about the antitrust relevance of claims hat the majority, or even an overwhelming majority, of the hypothetical monopolist's marginal customers (i.e. the customers lost following the imposition of a SSNIP) would shift their purchases outside the candidate relevant market (rather than shifting to other firms within the relevant market) in response to a price increase by one of the firms. Under linear demand the fraction of these lost sales that would find their way to sellers outside the candidate market would need to be at least █ percent. Under constant elasticity demand it would need to be █ percent. Clearly, a very large fraction of the sales lost to a SSNIP could substitute outside of the market rather than within the market and still make a five percent increase in price profitable. For a SSNIP price increase standard of 1 percent the corresponding thresholds for the diversion ratio would be █ percent and █ percent—nearly all the sales that are lost following a SSNIP could move outside the candidate market and the price increase would still be profitable.

28. In terms of market definition, Dr. Scheffman's analysis simply does not prove his conclusion. Instead, a small but significant price increase by a hypothetical monopolist PNOS (or the merged firm) would be profitable

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[15] As O'Brien-Wickelgren note, alternative demand structures such as AIDS, logit and semi-log yield outcomes that are intermediate to the linear and constant elasticity demand structures.

even if the vast majority of consumers shopping at Whole Foods and Wild Oats, say 80% or even 90% of the marginal customers, had a conventional supermarket or another firm outside the hypothesized PNOS market as their next best alternative.

29. Dr. Scheffman has claimed that models such as those that underlie Exhibit 1 do not fit with real world pricing behavior. However, the claim cannot be that they are unrealistic because they do not explain current prices or margins—these models are constructed based on the current levels of prices and margins so they explain price levels precisely. That is why his discussion on the degree of consumer price sensitivity is so misguided: in the end it implies that incremental margins of Whole Foods and Wild Oats cannot be as high as he claims they actually are. One or the other has to give—either Dr. Scheffman has overstated margins, in which case he has understated the CL, or he has overstated price sensitivity, in which case his conclusions regarding the size of the Actual Loss are incorrect. Either way, he is wrong.

30. Dr. Scheffman's analysis of the importance of consumers shifting outside of the PNOS candidate market in response to a SSNIP is also wrong. Though he speculates at length about what this means for the existence of a PNOS market[16], he simply ignores quantitative evidence that directly contradicts his assertions.

31. Evidence of what Whole Foods regards as the next–best option for current Wild Oats shoppers is contained in the "Project Goldmine" spreadsheet, which was prepared by Whole Foods' management to assess the value of the proposed merger with Wild Oats. The spreadsheet provides Whole Foods' estimate of what fraction of business from each closed Wild Oats

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[16] For example, five of the seven bullet points in ¶ 131 address precisely this point. Expert Report of David Scheffman at ¶131.

store will come to nearby Whole Foods stores. Since closing a store is like a very large price increase—that is, a price increase that is large enough to drive all customers away—it tells us about where the <u>average</u> Wild Oats shopper would go if they left Wild Oats. The type of diversion ratio considered in the critical diversion formulation refers to the marginal customers, and asks what fraction of shoppers who leave Wild Oats in response to a small price increase would shift their purchases to Whole Foods or another PNOS?[17] The average diversion ratio measures the same thing as the marginal diversion ratio: the portion of consumers who used to purchase at A who shift their purchases to B, but does so in the scenario when all of A's customers leave (e.g. when Whole Foods closes a Wild Oats store). The marginal and average diversion ratios may in fact be different, but one would expect them to be related.

32. Based on the Project Goldmine spreadsheet, Whole Foods estimates an average diversion ratio for the closed stores of ▮▮▮ percent.[18] This

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[17] Yet, it bears note that even in the critical diversion formulation, if Whole Foods (or more generally for purposes of market definition, a profit maximizing monopolist) would close the Wild Oats store it would be appropriate to use the average (rather than the marginal) diversion ratio to determine the profitability of such an action. I return to this below in my discussion of the anti-competitive effect of the proposed closing of some of the acquired Wild Oats stores.

[18] Since Whole Foods stores are on average significantly larger (in terms of sales) than the Wild Oats stores with which they compete, head-to-head diversion ratios in the other direction (from Whole Foods to Wild Oats) would tend to be smaller. For example, in ¶78 and ¶89 of his report, Dr. Scheffman claims that Wild Oats volume losses translate into no more than ▮▮▮▮▮ of Whole Foods' volume gains. However, as I pointed out above marginal and average diversions are not the same. It is important to remember that the antitrust question is where customers would divert <u>out</u> of Whole Foods at the price margin, and the answer to that question is not necessarily the same as the answer to the question of where consumers diverted <u>into</u> Whole Foods upon the introduction of an entirely new choice in their marketplace. Dr. Scheffman has assumed that diversions into Whole Foods are symmetric to diversions out of Whole Foods and that marginal diversions are identical to average diversions. The two concepts should be related but they won't in general be the same.

estimate is at least █████████ the diversion ratios needed to make a price increase of 5 percent profitable for a joint owner of the two stores. It is more than ██████ the threshold diversion ratio that would make a 1 percent price increase profitable. While the marginal and average diversion ratios could be different, there is no evidence that they would differ by enough to reverse these conclusions—or even that the difference would go in the necessary direction. Notwithstanding Dr. Scheffman's qualitative arguments and assertions, the substantial diversions between Whole Foods and Wild Oats (in those markets where they compete head-to-head) reflected in the Project Goldmine spreadsheet shows that Whole Foods believes that Wild Oats customers simply will not move their purchases to stores outside the proposed PNOS market in competitively relevant numbers. And the magnitudes of the diversion ratios estimated by Whole Foods itself indicate that a SSNIP of the indicated magnitude would be profitable in these situations.

IV. Critical Loss and the Anticompetitive Gains from Closing Wild Oats Stores

33. The key insight for correctly applying CL analysis to a merger or market definition is how much profit the other party (in the case of a merger) or other parties (in the case of the SSNIP analysis) gains from an increase in price by one of the firms. The loss in sales from increasing price when each seller acts unilaterally is already factored in to setting the existing (pre-SSNIP) price. In particular, the degree of customer price sensitivity at the store level and the ability of consumers to substitute to other firms outside of the market as well as inside the relevant market are reflected in each seller's chosen margin. The incentive for the merged firm or the hypothetical monopolist to increase price above the current level comes

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from the profits that would be gained by the other firm(s) when one firm increases its price.[19]

34. The gain to any one firm from an increase in price by another firm is its increased profits from greater sales and/or a higher price. Let C represent the subject firm's unit costs and let its current price be P. Let Q represent the quantity it sells at price P, and let the changes in these variables when another seller raises its price be ΔP and ΔQ. Then the gain in profits accruing to the firm will be approximately:[20]

(3)   Change in Profit = $(P-C)\Delta Q + Q\Delta P$

35. The first term represents the profit from the transferred sales while the second term reflects the gain in profits due to the reduction in competition and the resulting higher price. The percentage change in profits is then

(4)   Percent Change in Profit = $m\dfrac{\Delta Q}{Q}+\dfrac{\Delta P}{P}$

where, as above, m is the firm's margin on incremental sales. Here $\Delta Q/Q$ is the percentage increase in sales and $\Delta P/P$ is the percentage increase in price. In words, when seller A increases its price, other firms that compete with A gain. The gain to these other firms from A's price increase is larger when (i) they capture more of the transferred sales; (ii) their margin is higher, and (iii) they are able to increase price by a greater percentage. Equation (4) explains why the merged firm or the hypothetical monopolist

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[19] Of course, this is also the motivation for collusive behavior.

[20] To keep things simple I have ignored the "interaction" effect of the change in price and the change in quantity $\Delta P\Delta Q$ which will lead me to somewhat understate the gain in profits if both P and Q rise for the firm.

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would typically have an incentive to raise price above the current level, unless entry or other forces would prevent it from doing so. The merged firm gets to capture this profit increase that would otherwise go to an independent seller, so the gains from raising price are greater.

36. We can apply this type of analysis to the planned closure of Wild Oats stores by Whole Foods. Whole Foods would be willing to close some stores even if they were profitable before the merger and would have continued to be so after the merger, which means they would have been kept open had they had continued to be owned by an independent profit-maximizing firm. Whole Foods would close such a store as long as the profits transferred to Whole Foods as a result of the closure, given by equation (4), exceed the profits that would be earned by keeping the store open. The extra gain to the post-acquisition Whole Foods from closing a Wild Oats store is the same source of gain that Whole Foods would get from increasing prices at Wild Oats. Both transfer profits to Whole Foods and that transfer of profits would not be considered by an independent decision maker at Wild Oats, but would be considered by the combined Whole Foods – Wild Oats.

37. The key difference in analyzing a closure is that the average (rather than the marginal) diversion ratio is directly relevant. The Project Goldmine spreadsheet provides Whole Foods' estimate of exactly this quantity. The ██percent diversion ratio shown in the Project Goldmine spreadsheet is then quite informative. Together with any increase in price, the ██percent diversion ratio represents the transfer to Whole Foods generated by closing one of its competitors—just as it would represent the gain from increased sales and prices at Whole Foods caused by an increase in Wild Oats prices. The existence of the gain expressed in equation (4) gives

<u>Whole Foods an added incentive to raise price and gives it an added incentive to close the Wild Oats store.</u>

38. In the case of a price increase, it is clear where the transfer to Whole Foods comes from—it comes from consumers who now pay higher prices to Whole Foods. In the case of a firm buying and closing down a competitor that would otherwise continue to operate, it comes from the loss of an alternative place to shop, which is economically equivalent to raising the former competitor's price by so much that no one shops there.[21] Just as ███ diversion ratios generate an incentive for merging firms to raise prices post-merger, they also generate an incentive to reduce consumer options—even if the closed stores may be profitable and would remain open if owned independently.

39. Of course, the duration of any loss would be limited by the time it would take for entry or other forces to replace it, just as the duration of any price increase would be limited by the time it takes for entry/repositioning to erode the price increase. In this regard, it is noteworthy that Project Goldmine estimates that volume gains for Whole Foods from closing Wild Oats stores will last for ██████████ years. This is highly informative of Whole Foods' view of the inability of other sellers to quickly erode the effects of the proposed merger, through either new entry or repositioning. In contrast to the testimony of Dr. Scheffman, Whole Foods' own projections assume that other sellers will not quickly erode these effects.

40. Given the ███ diversion ratios identified in Project Goldmine, the anti-competitive incentive to close the Wild Oats stores is clear—closing Wild

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[21] In his analysis, Dr, Scheffman points out that Whole Foods and Wild Oats are different. That is precisely the point here – that difference is what generates the loss to consumers from decreased variety.

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Oats' stores would transfer ████████ revenues to Whole Foods. This harms consumers in the form of higher prices and reduced choice.[22]

V. Dr. Scheffman's Analysis of Whole Foods Prices

41. Dr. Scheffman's calculations of price differences across stores do not meet even minimum standards of analysis, and the conclusions he draws from these calculations are unsupported by both economics and the evidentiary record.

42. Dr. Scheffman's price calculations are based on item-specific register prices at Whole Foods stores on a *single day* in June of 2007—while this dispute was ongoing. He finds that register prices on this particular day do not vary much across stores within a given region—the vast majority of UPC's (universal product codes) have identical prices at all stores. He takes this finding as evidence that "WFM prices by regions ... the prices are determined at the ████████████████████████ and prices across stores are the same."[23]

43. These conclusions are inconsistent with the evidentiary record and testimony in this case. For example, Will Paradise, President of the Rocky Mountain Region for Whole Foods, testified that Whole Foods ████████

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██

████████████████ In this description he specifically referred to these price reductions as resulting from "grocery competition or produce competition" and he named specific competitors.

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[22] See my Expert Report in this matter (p. 38-40) for a description of how to quantify this value.

[23] Expert Report of David Scheffman at ¶289

44. An example of this pricing strategy is provided by the June 2005 entry of ███████ a competing PNOS, into the ████████████████ market. Documents from Whole Foods report the following:

> "We have made the following decisions: 1) We would like to match ███████ on key items on your respective departments 2) Would like to get aggressive in our sales flyer with items that we can make a statement with 3) Would like to match ███████ sales flyer....We want to really punish ██ and make a statement about any competition that thinks about competing with us." [24]

> "We are going to match all their sale items this month; this will be our regular price so that it will not appear that we are just matching their sale items." [25]

> "Here are the additional changes to ███████ pricing that need to be made...[lists 22 items/families of items on which price will be reduced up to ███ " [26]

45. The preceding testimony, empirical evidence and first hand accounts make it clear that, contrary to the claims made by Dr. Scheffman (which were based on a single day in 2007, Whole Foods prices do vary across stores and do respond to competition. Evidence from the record shows how Whole Foods changed prices in response to competition from Wild Oats as well. For example, the FY 2005 Second Quarter report to the Whole Foods Board by A.C. Gallo (co-President of WFMI) states:

> "Margins are a little low [in Louisville, KY] because we having to match some ridiculously low special pricing at Wild Oats. Sales at Oats are way down, and they are responding with some desperation pricing."

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[24] WFM-128-00034534

[25] WFM-128-00041877

[26] WFM-123-00016697

46. Other documents support the hypothesis that Whole Foods did price by store and did base that pricing on competition:

> "I have put together a list of primary competitors and secondary, By store. The reason for this list is so that your team can focus on the key competitors and not waste time with every micro competitor out their (sic)…My expectation is that we focus on select items and price match. Also, if these competitors go up on price we should do the same."[27]

47. Dr. Scheffman's conclusions about pricing are also inconsistent with econometric evidence on Whole Foods' margins, which vary across stores according to the presence or absence of local competition from Wild Oats. In my Expert Report I showed that Whole Foods' price-cost margins in such perishable departments as seafood, produce and meat are about ■ percent lower when a Wild Oats store is located nearby. Assuming constant unit costs, this implies that Whole Foods' prices on perishables are about ■ percent lower in locales where Whole Foods and Wild Oats compete head-to-head. These findings are consistent with what an economist would expect - price effects from competition are largest in the departments where Whole Foods and Wild Oats are most similar to each other, and most distinctive from other sellers. These findings are also consistent with the testimony of Whole Foods executives, cited above, who stated that Whole Foods charged lower prices when faced with local competition.

48. Even taken at face value, however, Dr. Scheffman's "finding" that Whole Foods' prices are uniform across locales—they are ostensibly set to meet margin targets—does not support his conclusions about market definition. According to Dr. Scheffman, the relevant market is "at least" as large as all supermarkets. This means that Whole Foods' prices are constrained by
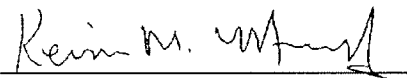
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[27] WFM-108-00007185

competition with conventional supermarkets, to which Whole Foods' customers would substitute were Whole Foods' to raise price or not reduce price when the competition reduced their price. Yet Dr. Scheffman argues that Whole Foods' prices are insensitive to the state of local competition among supermarkets, whether or not Wild Oats is in the mix. The only logical conclusion is that Whole Foods' prices are not much constrained by competition from conventional supermarkets or any other competitive force that varies by location.

49. Even if the claim that Whole Foods prices uniformly across stores within a region were factually accurate, the existence of uniform pricing does not negate or dilute the anticompetitive effects of eliminating Wild Oats as a competitor. First, it does not alter the reduction in consumer welfare from closing Wild Oats stores, which I discussed above. This loss to consumers occurs whether or not Whole Foods raises prices after the merger. This loss to consumers is however equivalent to their loss from raising Wild Oats' prices, as I noted earlier.

50. Second, it ignores the fact that even a seller that prices uniformly across areas will set prices that reflect the degree of competition in each of the local markets in which it sells. When a seller prices purely "to market" in each locale, the prices it sets will reflect the degree of competition and the ability of consumers to substitute in each locale. Then areas with more competition will have lower prices, and so on. But if a seller sets uniform prices, those prices will reflect the average amount of competition (formally, the sales-weighted average of demand elasticities) across locales. Then a reduction in competition in some local markets will cause the uniform pricing seller to raise prices "uniformly"—that is, in all the local markets where it sells. Contrary to Dr. Scheffman's view, the anticompetitive effects of reducing local competition do not disappear,

they are merely spread over consumers in all locations. Spreading these effects widely does not make them any less real.[28]

51. In summary, Whole Foods prices do vary with competition. Evidence from margin data provided by Whole Foods confirms that Whole Foods does cut price in response to local competition. Competitive pressures from Earth Fare and Wild Oats provide two informative historical examples.

July 13, 2007

Kevin M. Murphy

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[28] The larger effect of competition on margins than on prices is consistent with some tendency to price uniformly. If Whole Foods keeps individual item prices constant across areas but competition varies then Whole Foods will lose sales to competitors on the higher margin products where their prices are "too high." That will lower margins in the areas where they face competition even if by assumption prices are the same item by item.

Materials Considered

LEGAL

Expert Report of David T. Scheffman, Ph. D, July 9, 2007

Expert Report of Kevin M. Murphy, Ph. D, July 9, 2007

PRESS, WEBSITES, AND OTHER

Harris, Barry C. and Joseph J. Simons, "Focusing Market Definition: How Much Substitution is Necessary?" Research in Law and Economics, v. 12, 1989

Langenfeld, James and Wenquing Li, "Critical Loss Analysis in Evaluating Mergers," The Antitrust Bulletin, Summer 2001

Danger, Kenneth L. and H.E. Frech III, "Critical Thinking about 'Critical Loss' in Antitrust," The Antitrust Bulletin, Summer 2001

O'Brien, Daniel P. and Abraham L. Wickelgren, "A Critical Analysis of Critical Loss Analysis", 71 Antitrust L.J. (2003)

Katz and Shapiro, "Further Thoughts on Critical Loss," Antitrust Source, March 2004

Scheffman, David T. and Joseph J. Simons, "The State of Critical Loss Analysis: Let's Make Sure We Understand the Whole Story", Antitrust Source, Nov. 2003.

Transcript of remarks of Dr. Scheffman at the FTC conference on "Grocery Store Antitrust: Historical Retrospective and Current Developments", May 24, 2007

BATES

WFM-128-00034534

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Exhibit 1

Critical Diversion Ratios for the Profitability of a Price Increase

Margin	Linear Demand			Constant Elasticity Demand		
	Price Increase (%)			Price Increase (%)		
	1%	5%	10%	1%	5%	10%
10%	9.1%	33.3%	50.0%	3.80%	10.50%	11.40%
15%	6.3%	25.0%	40.0%	2.50%	8.40%	10.70%
20%	4.8%	20.0%	33.3%	1.80%	6.70%	9.40%
25%	3.8%	16.7%	28.6%	1.40%	5.40%	8.10%
30%	3.2%	14.3%	25.0%	1.10%	4.40%	6.90%
35%	2.8%	12.5%	22.2%	0.90%	3.70%	5.90%
40%	2.4%	11.1%	20.0%	0.70%	3.00%	5.00%
45%	2.2%	10.0%	18.2%	0.60%	2.50%	4.30%
50%	2.0%	9.1%	16.7%	0.50%	2.10%	3.60%
55%	1.8%	8.3%	15.4%	0.40%	1.80%	3.00%
60%	1.6%	7.7%	14.3%	0.30%	1.40%	2.50%
65%	1.5%	7.1%	13.3%	0.30%	1.20%	2.10%
70%	1.4%	6.7%	12.5%	0.20%	0.90%	1.70%
75%	1.3%	6.3%	11.8%	0.20%	0.70%	1.30%
80%	1.2%	5.9%	11.1%	0.10%	0.60%	1.00%
85%	1.2%	5.6%	10.5%	0.10%	0.40%	0.70%
90%	1.1%	5.3%	10.0%	0.10%	0.30%	0.50%

Source: Daniel P. O'Brien & Abraham L. Wickelgren, A Critical Analysis of Critical LossAnalysis, 71 Antitrust L.J. 161 (2003).
Note: Critical diversion rations are from Tables 1 and 2 in O'Brien and Wickelgren